

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the above-identified application:

Listing of Claims:

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1. **(Currently Amended)** A method of operating a network, the network comprising a plurality of nodes coupled by a plurality of optical links, comprising:
provisioning a virtual path between a first node and a second node of said plurality of nodes, wherein said first node comprises a source node, said second node comprises a destination node, and said provisioning comprises:
identifying said first node and said second node of said plurality of nodes, dynamically discovering a physical path from said first node to said second node by sending a message from said first node to said second node and dynamically identifying any intermediary nodes comprising said physical path in response to sending said message, and
dynamically establishing said virtual path by dynamically configuring a set of connections between said first node, said second node, and said intermediary nodes, if any, using intermediary links of said plurality of optical links by sending a reply message in reply to said message over said intermediary links.
 2. **(Previously Presented)** The method of claim 1, further comprising:
testing said virtual path by testing each one of said intermediary nodes and said intermediary links as a single circuit.
 3. **(Previously Presented)** The method of claim 1, further comprising:
allocating said intermediary links between said first, said second and said intermediary nodes.

4. **(Original)** The method of claim 3, further comprising:
terminating said virtual path by automatically deallocating said intermediary links.
5. **(Original)** The method of claim 4, wherein said intermediary links are available for re-use upon deallocation.
6. **(Original)** The method of claim 3, further comprising:
terminating said virtual path by sending a termination message from one of said first and said second nodes to the other of said first and said second nodes, wherein said termination message is sent along said physical path and each one of said intermediary links is deallocated by a respective one of said nodes as said termination message is sent to each of said nodes.
7. **(Original)** The method of claim 6, wherein said intermediary links are available for re-use upon deallocation.
8. **(Original)** The method of claim 6, wherein said intermediary links are deallocated substantially simultaneously upon reception of a broadcasted termination message.
9. **(Original)** The method of claim 1, further comprising:
restoring said virtual path in response to a failure along said physical path by:
discovering an alternate physical path from said first node to said second node by automatically identifying intermediary nodes of said alternate physical path, and
re-establishing said virtual path by configuring a set of connections between said nodes of said alternate physical path.

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10. **(Original)** The method of claim 9, wherein at least one of said intermediary nodes of said physical path is also one of said intermediary nodes forming said alternate physical path.

11. **(Original)** The method of claim 1, further comprising:
sending messages to maintain knowledge of a topology of the network and to
determine if neighboring nodes have failed.

12. **(Original)** The method of claim 11, wherein each one of said plurality of nodes obtains information on neighboring ones of said plurality of nodes such that each one of said plurality of nodes is able to maintain a database representing a topology of the network.

13. **(Previously Presented)** The method of claim 12, wherein use of said database in said discovering said physical path allows said dynamically discovering said physical path to proceed more quickly.

Claims 14-32 (**Canceled**)

33. **(Currently Amended)** An optical network comprising:
a plurality of optical links;
a plurality of nodes, each one of said plurality of nodes coupled to at least one other of said plurality of nodes by at least one of said plurality of optical links, wherein said nodes are configured to provision a virtual path between a ~~first~~ source node and a ~~second~~ destination node of said plurality of nodes by virtue of being configured to:
identify said ~~first~~ source node and said ~~second~~ destination node of said plurality of nodes,
dynamically discover a physical path from said ~~first~~ source node to said ~~second~~ destination node by virtue of being configured to send a message from said ~~first~~ source node to said ~~second~~ destination

node and dynamically identify any intermediary nodes of said physical path in response to sending said message, and dynamically establish said virtual path by virtue of being configured to dynamically configure a set of connections between said nodes of said physical path using intermediary links of said plurality of optical links by sending a reply message in reply to said message over said intermediary links.

34. (Canceled)

35. (Currently Amended) A network comprising:

a plurality of nodes coupled by a plurality of optical links, wherein said plurality of nodes are configured to provision a virtual path between a first source node and a ~~second~~ destination node of said plurality of nodes, wherein each of said plurality of nodes comprises:

identifying means for identifying said first source node and said ~~second~~ destination node of said plurality of nodes,

discovering means for dynamically discovering a physical path from said first source node to said ~~second~~ destination node by sending a message from said first source node to said ~~second~~ destination node and dynamically identifying any intermediary nodes of said physical path in response to sending said message, and

establishing means for dynamically establishing said virtual path by dynamically configuring a set of connections between said nodes of said physical path using intermediary links of said plurality of optical links by sending a reply message in reply to said message over said intermediary links.

Claims 36-37 (Canceled)

38. (New) A method of provisioning a virtual path between a first node and a second node of a network comprising a plurality of nodes coupled by a plurality of optical links, said method comprising:

sending a message from said first node to said second node on each of one or more available physical paths between said first node and said second node;

identifying a first instance of said message to arrive at said second node, wherein said first instance of said message is associated with a first physical path of said one or more available physical paths; and

configuring a set of connections between said first node, said second node, and any intermediate nodes of said plurality of nodes associated with said first physical path by sending a reply message from said second node to said first node in reply to said first instance of said message using at least one intermediary link of said plurality of optical links, wherein said at least one intermediary link is associated with said first physical path.

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